

NATIONAL TRANSPORTATION SAFETY BOARD
Public Meeting of December 6, 2016
(Information subject to editing)

**Southbound Union Pacific Railroad freight train collision with northbound Union Pacific
Freight train at milepost 228.6, in Hoxie, Arkansas**
August 17, 2014
NTSB/RAR-16/04

This is a synopsis from the NTSB's report and does not include the Board's rationale for the conclusions, probable cause, and safety recommendations. NTSB staff is currently making final revisions to the report from which the attached conclusions and safety recommendations have been extracted. The final report and pertinent safety recommendation letters will be distributed to recommendation recipients as soon as possible. The attached information is subject to further review and editing to reflect changes adopted during the Board meeting.

EXECUTIVE SUMMARY

On August 17, 2014, at 2:28 a.m. central daylight time, southbound Union Pacific Railroad freight train IMASNL-16 collided with northbound Union Pacific freight train IQNLPI-17 at milepost 228.6, while traversing the turnout at control point Y-229 in Hoxie, Arkansas. As a result of the collision, the engineer and the conductor from the southbound train died, and the engineer and the conductor from the northbound train were seriously injured.

The following safety issues are covered in this report:

- Fatigue and Employee Work Schedules: Regulatory requirements to use science-based tools, such as biomathematical models, are needed to reduce start time variability that results in irregular work-rest cycles and train crew fatigue
- Medical Issues: Regulatory requirements for screening, evaluating, and ensuring adequate treatment standards for sleep apnea and other sleep disorders for railroad employees in safety-sensitive positions
- Union Pacific Railroad Medical Rules: Union Pacific Railroad needs (1) medical rules that would require railroad employees in safety-sensitive positions to report all diagnosed sleep disorders; and (2) to perform periodic evaluations to ensure the condition is appropriately treated
- Automated Systems that Reset Alertness Devices: An automatic horn sequencer prevented the operation of an electronic alertness device that was designed to help the southbound train crewmembers maintain vigilance in the locomotive cab by monitoring engineer activity and applying the train brakes should the device fail to detect activity for a predetermined period of time

- Positive Train Control: A functioning positive train control system would have prevented this accident

FINDINGS

1. The southbound train crew did not respond to the three restrictive signals immediately prior to the collision and took no action to slow or stop the train prior to arriving at control point Y-229, resulting in the collision with the northbound train.
2. The northbound train crew operated their train in accordance with traffic control signals, had no indication of the impending collision with the southbound train, and did not have time to apply the emergency air brakes prior to the collision.
3. The southbound train conductor was likely asleep at the time of the accident due to the variability of his shift start times which caused fatigue and the circadian desynchronization he experienced due to his operating the train in the early morning hours when he was predisposed to sleep.
4. Had the provisions specified in the hours of service requirements for commuter and passenger trains been applied to freight operations, the southbound train conductor would not have been allowed to work such a highly variable schedule because of its high risk for causing fatigue.
5. The southbound train locomotive engineer was fatigued and likely asleep due to his diagnosed but inadequately treated moderate sleep apnea and operating the train in the early morning hours when he was predisposed to sleep.
6. The continued occurrence of railroad accidents attributed to fatigue caused by sleep apnea are due in part to the failure of the Federal Railroad Administration since 2002 to respond to the hazards posed by undiagnosed or inadequately treated sleep apnea.
7. If the Federal Railroad Administration had similar standards as those in other modes of transportation, the southbound train locomotive engineer would have been required to periodically demonstrate adequate, ongoing treatment before he could obtain medical certification and be considered fit for duty.
8. Union Pacific Railroad's medical rules did not require the southbound train locomotive engineer, diagnosed with symptomatic, moderate sleep apnea to report his condition or ensure he followed the treatment recommendations from his sleep physician.
9. The lack of minimum standards for medical rules among Class I, intercity, and commuter railroads poses an unnecessary risk for employees in safety-sensitive positions who are diagnosed with sleep disorders.
10. The horn sequencer negated the alerter from alarming and providing an opportunity for the southbound train crew to prevent this accident.

11. Had the territory been equipped with a properly functioning positive train control system, the collision would have been prevented.
12. None of the following were factors in the accident: (1) the traffic control system; (2) the braking system of the southbound train; (3) train crew experience, or distraction by cell phones by the southbound train crewmembers; (4) medical conditions or use of alcohol, other drugs, or impairing substances by the southbound train conductor; or (5) the work schedule of the southbound train locomotive engineer.

PROBABLE CAUSE

The National Transportation Safety Board determines that the probable cause of the accident was the failure of the southbound train crewmembers to respond to the signal indications requiring them to slow and stop their train prior to control point Y-229 because they were fatigued and had fallen asleep due to (1) the locomotive engineer's inadequately treated obstructive sleep apnea, (2) the conductor's irregular work schedule, and (3) the train crew operating in the early morning hours when they were predisposed to sleep. Contributing to the accident was (1) the lack of a functioning positive train control system; (2) the use of an automatic horn sequencer that, when activated, negated the operation of an electronic alertness device; (3) the Federal Railroad Administration's failure to promulgate rules regarding sleep disorders; and (4) the absence of federal regulations requiring freight railroads to use fatigue modeling tools for train crew work schedules.

RECOMMENDATIONS

New Recommendations

As a result of this investigation, the National Transportation Safety Board makes the following new safety recommendations:

To the Federal Railroad Administration:

1. Require freight railroads to use validated biomathematical fatigue models, similar to the models used by passenger railroads, to develop work schedules that do not pose an excessive risk of fatigue. (R-16-XX)
2. Develop and enforce medical standards that railroad employees in safety-sensitive positions diagnosed with sleep disorders must meet to be considered fit for duty. (R-16-XX)

To BNSF Railway, Canadian National Railway, Canadian Pacific Railway, CSX Transportation, Kansas City Southern Railway, Norfolk Southern Railway, Intercity Railroads, and Commuter Railroads:

3. Review and revise as necessary your medical rules, standards, or protocols to ensure you are informed of any diagnosed sleep disorders that employees in

safety-sensitive positions must report and, when an employee makes such a report, perform periodic evaluations to ensure the condition is appropriately treated and the employee is fit for duty. (R-16-XX)

To Class I Railroads:

4. Revise your scheduling practices for train crews and implement science-based tools, such as validated biomathematical models, to reduce start time variability that results in irregular work-rest cycles and fatigue. (R-16-XX)

To the Union Pacific Railroad:

5. Revise your medical rules to add any diagnosed sleep disorder to the list of medical conditions that employees in safety-sensitive positions must report and, when an employee makes such a report, perform periodic evaluations to ensure the condition is appropriately treated and the employee is fit for duty. (R-16-XX)

Previously Issued Recommendations Reiterated in This Report

As a result of this investigation, the National Transportation Safety Board reiterates following two safety recommendations:

To the Federal Railroad Administration:

1. Develop medical certification regulations for employees in safety-sensitive positions that include, at a minimum, (1) a complete medical history that includes specific screening for sleep disorders, a review of current medications, and a thorough physical examination, (2) standardization of testing protocols across the industry, and (3) centralized oversight of certification decisions for employees who fail initial testing; and consider requiring that medical examinations be performed by those with specific training and certification in evaluating medication use and health issues related to occupational safety on railroads. (R-13-21)
2. Require railroads to medically screen employees in safety-sensitive positions for sleep apnea and other sleep disorders. (R-12-16)

Earlier Recommendations

On February 4, 2015, the National Transportation Safety Board proposed the following urgent recommendations to the Federal Railroad Administration, the Association of American Railroads, the American Short Line and Regional Railroad Association, and the American Public Transportation Association regarding automated inputs on locomotives through the use of alerters:

To the Federal Railroad Administration:

1. Review your existing regulations and your motive power and equipment compliance manual, and revise them as needed to prohibit automatic systems from resetting the locomotive alerter. (R-15-4) (Urgent)
2. Immediately notify railroads of the circumstances of this accident and the risks posed by automated inputs that reset alerter cycles. Urge railroads to assess all controlling locomotive alerter systems to (1) identify and document any system inputs that reset the alerter cycle without manual intervention by crewmembers and (2) determine ways to eliminate such resets. (R-15-5) (Urgent)

To the Association of American Railroads, the American Short Line and Regional Railroad Association, and the American Public Transportation Association:

3. Inform your members of the circumstances of this accident and the risks posed by automated inputs that reset alerter cycles. Urge your members to assess their locomotive alerter systems to (1) identify any inputs that reset the alerter cycle without intervention by crew members and (2) determine ways to eliminate such resets. (R-15-6) (Urgent)